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10/075,708	02/14/2002	Paul A. Kline	CRNT-0067	8383

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Woodcock Washburn LLP
46th Floor
One Liberty Place
Philadelphia, PA 19103

EXAMINER
LEE, BENJAMIN C

ART UNIT	PAPER NUMBER
2632	10

DATE MAILED: 08/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/075,708	KLINE, PAUL A.	
	Examiner	Art Unit	
	Benjamin C. Lee	2632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 May 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3,6-9* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. **Claims 10-15** are objected to because of the following informalities:

In claim 10, line 2, "is a second portion " should have read --is coupled to a second portion--. Claims 11-15 are similarly objected for depending on claim 10.

--Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-5, 8-11, 16-18, 20, 22-24, 28, 40, 45-46, 48, 57-60** are rejected under 35 U.S.C. 102(b) as being anticipated by Paull (US pat. #3,656,112).

1) In considering claim 1: Paull disclosed the claimed method for communicating data over a power line (Abstract and Fig. 2), comprising: receiving (204) a signal from a first portion of the power line (202); converting at least a portion of the signal to a non-electrically conductive signal (205); and communicating the non-electrically conductive signal to a non-electrically conductive communication path ("wireless link" of Fig. 2).

2) In considering claims 2-5, 8-11, 16-18, 20, 22-24, 28, 40, 45-46, 48, 57-60, Paull disclosed all of the claimed subject matter, including:

a) claim 2: claimed signal comprises a data component and a power component (col. 3,

lines 41-75);

b) claim 3: claimed power component comprises a low frequency signal and the data component comprises a high frequency signal (inherent from use of frequency modulation to impose data component frequency, which is usually higher, onto the power component frequency which is of low frequency according to col. 3, lines 62-66);

c) claim 4: claimed filtering (203 of Fig. 2) the power component from the data component;

d) claim 5: claimed inductive filtering (transformer 203 in Fig. 2);

e) claim 8: claimed converting the data component of the signal to a non-electrically conductive signal ("wireless link" of Fig. 2);

f) claim 9: claimed substantially preventing the power component of the signal from communicating with the non-electrically conductive communication path ("wireless link" of Fig. 2);

g) claim 10: claimed wherein the non-electrically conductive communication path is (coupled to) a second portion of the power line (Fig. 2, wherein both sides of the power line separated by transformer 203 constitute first and second portions);

h) claim 11: claimed second portion (208 of Fig. 2) of the power line carries a lower voltage than the first portion (202 of Fig. 2) of the power line (transformer 203 in Fig. 2 is conventionally and inherently a power step-down transformer);

i) claims 16-18: claimed radio frequency signal/communication path over air (col. 3, lines 50-51);

j) claim 20: claimed demodulating the signal (inherent in the receiving step

corresponding to the transmission step involving signal modulation according to col. 3, lines 63-67);

k) claims 22-24: claimed receiving the non-electrically conductive signal, converting it to an electrically conductive signal, and communicating the conductive signal to a second portion of the power line (transceivers 205, 206 coupled to power line portions 202, 208 in Fig. 2);

l) claims 28 and 40: see consideration of claim 1, and Fig. 2 of Paull;

m) claim 45: see consideration of claim 11;

n) claim 46: claimed modem communication interface is met by the modulator/demodulator functions discussed in the consideration of claim 20 above.

o) claim 48: see consideration of claim 11;

p) claim 57: RF transceiver as the second signal conversion device (206 and col. 3, lines 50-51);

q) claims 58-60: see consideration of claim 1.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 21, 26-27, 34-35, 44, 47, 49, 51 and 54-56** are rejected under 35 U.S.C. 103(a) as being unpatentable over Paull.

1) In considering claim 21, Paull disclosed all of the claimed subject matter as in claim

20, except:

--the claimed routing the demodulated signal.

Since Paull teaches that the communication signals from interrogation station 100 are addressable to any of the plurality of reply stations 300, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that routing of the demodulated signals can further be used when the number of reply stations become large and their geographic spread is expansive.

2) In considering claims 26-27, Paull disclosed all of the claimed subject matter as in claim 22, except:

--the claimed further converting the non-electrically conducting signal to a radio frequency signal for communication to a second communication path.

Paull teaches using a wireless radio frequency link over air to bypass a power transformer 203 in the power line, wherein the radio non-conductive signals are received and converted back to conductive signals for input back onto the power line on the other side of the transformer (Fig. 2). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention that instead of impinging the signal back onto the power line for the last portion of the communication path as a wired communication path in a system such as taught by Paull, an alternative long range radio link over air can be used without unexpected results.

3) In considering claims 34-35, Paull met all of the claimed subject matter as in claim 28, except:

--the claimed optoelectronic transceiver, or one of light-emitting diode, laser, vertical cavity surface emitting laser, photosensitive dioe and photosensitive transistor.

Paull teaches of a wireless link that could be radio frequency or acoustic (col. 3, lines 50-51). However, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that other wireless links known in the art including an optical link, which uses one or more of the claimed optical components, can alternatively be used to implement the wireless link in a system such as taught by Paull.

4) In considering claim 44, Paull met all of the claimed subject matter as in claim 28, wherein:

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use weather-tight housing for the devices including the signal conversion device in a system such as taught by Paull that is intended for use out-doors.

5) In considering claim 47, Paull met all of the claimed subject matter as in claim 46, plus the consideration of claim 21.

6) In considering claim 49, Paull met all of the claimed subject matter as in claim 48, except:

--the claimed communication path is a second power line.

While Paull teaches converting data from the wireless link and coupling it back to the second portion of the same power line, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that due to the use of the wireless link, such data could be coupled to a nearby power line instead of the second portion if desired communication destination expands over an area requiring coverage of multiple power lines.

7) In considering claim 51, Paull met all of the claimed subject matter as in claim 48, plus the consideration of claims 26-27 above.

8) In considering claim 54, Paull met all of the claimed subject matter as in claim 45,wherein:

--it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that power line couplers of either inductive or capactive type conventionally known in the art can be used as the couplers 204, 207 in a system such as taught by Paull.

9) In considering claims 55-56, Paull met all of the claimed subject matter as in claim 45, plus the consideration of claims 34-35.

6. **Claims 6-7, 12-15 and 36-37** are rejected under 35 U.S.C. 103(a) as being unpatentable over Paull in view of Coutinho (US pat. #5,777,769).

1) In considering claim 6, Paull disclosed all of the claimed subject matter as in claim 4, except:

--specifying the claimed capacitively filtering the power component from the data component.

Paull teaches using couplers (couplings 204, 207 of Fig. 2 and col. 3, lines 41-61) to couple the data component to a transceiver without specifying a power/data filter. Coutinho teaches such use of filtering with the use of coupler (32, 36, 44). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use such filtering device to extract the data component before communication such as taught by Coutinho in a system such as taught by Paull, and furthermore that such filtering inherently includes reactance elements of capacitive and/or inductive nature.

2) In considering claim 7, Paull disclosed all of the claimed subject matter as in claim 4, plus the consideration of claim 6 in view of Coutinho, except:

--the claimed digitally filtering the power component from the data component.

However, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that any of various specific types of filtering known in the art including digital filtering can be used in a system such as taught by Paull and Coutinho so long as it performs the intended function of filtering the power component from the data component.

3) In considering claims 12-15, Paull disclosed all of the claimed subject matter as in claim 1, while:

Coutinho teaches by-passing a transformer (20) in a power line communication system (Figure) by converting power line data signal to a light communication path using an optic fiber (18) which constitutes a light pipe that is non-conductive communication path. In view of the teachings by Paull and Coutinho, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that if the non-conductive communication path in a system such as taught by Paull is required or desired to be of considerable length and ambient electromagnetic interference poses a potential problem, a fiber optic communication link such as taught by Coutinho can be used instead of the wireless link.

4) In considering claims 36-37, Paull disclosed all of the claimed subject matter as in claim 28, plus the consideration of claim 6 in view of Coutinho.

7. **Claims 19 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Paull in view of Spalti (US pat. #3,445,814).

1) In considering claim 19, Paull disclosed all of the claimed subject matter as in claim 1, while:

Spalti teaches receiving/coupling communication/data signals from a power line using an

inductive coupling (34 of Fig. 2). In view of the teachings by Paull and Spalti, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that a known inductive coupler such as taught by Spalti can be used as the unspecified coupler in a system such as taught by Paull for receiving/coupling data components from/to the power line.

2) In considering claim 29, Paull met all of the claimed subject matter as in claim 28, plus the consideration of claim 19 in view of Spalti.

8. **Claim 38** is rejected under 35 U.S.C. 103(a) as being unpatentable over Paull in view of Crimmins (US pat. #4,724,381).

1) In considering claim 38, Paull met all of the claimed subject matter as in claim 28, except:

--the claimed power supply having an input electrically coupled to the power line and an output electrically coupled to the signal conversion device.

Crimmins teaches a toroidal device coupling to a power line wherein power is supplied by the coupling as input to power the device (Fig. 3). Since the transceivers 205, 206 of Paull require power to operate, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to provide power from the power line such as taught by Crimmins to obtain an endless supply of power as inputs to the transceivers in a system such as taught by Paull in order to operate them.

9. **Claims 41-43** are rejected under 35 U.S.C. 103(a) as being unpatentable over Paull in view of Crimmins and Coutinho.

1) In considering claims 41-43, Paull and Crimmins made obvious all of the claimed subject matter as in claim 38, plus the consideration of claims 13-15 further in view of Coutinho.

10. **Claims 30-33 and 52-53** are rejected under 35 U.S.C. 103(a) as being unpatentable over Paull in view of Spalti and Toppeto (US pat. #4,263,549).

1) In considering claims 30-33, Paull and Spalti made obvious all of the claimed subject matter as in claim 29, while:

Toppeto teaches that inductively coupling transformer can take the form of toroid shape coil/core and furthermore that in order to promote easy mechanical attachment/removal of the transformer coupler to a wire, a hinged housing is used (col. 2, lines 5-7 and col. 3, lines 27-45). In view of the teachings by Paull, Spalti and Toppeto, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use a hinged type toroidal transformer such as taught by Toppeto as a specific form of inductive coupler in a system such as taught by Paull and Spalti for ease of mechanical attachment; furthermore, magnetically permeable cores and dielectric materials have been well known for use in a transformer to attain the desire inductive/magnetic characteristics and to provide for its housing support.

2) In considering claims 52-53, Paull met all of the claimed subject matter as in claim 45, plus the consideration of claim 30 in view of Spalti and Toppeto, wherein the torroidal transformer coupler constitute the claimed tap.

11. **Claim 39** is rejected under 35 U.S.C. 103(a) as being unpatentable over Paull in view of Crimmins, Spalti and Toppeto.

1) In considering claim 39, Paull and Crimmins made obvious all of the claimed subject matter as in claim 38, plus the consideration of claims 30-31 further in view of Spalti and Toppeto.

12. **Claims 25 and 50** are rejected under 35 U.S.C. 103(a) as being unpatentable over Paull

in view of Skinner, Sr. (US pat. #5,664,002).

1) In considering claim 25, Paull disclosed all of the claimed subject matter as in claim 1, while:

Skinner, Sr. teaches communicating electrically conducting signal to a telephone line using appropriate couplers 16/47 as a destination of the power line communication system (22 in Fig. 4). In view of the teachings by Paull and Skinner, Sr., it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that a power line communication system such as taught by Paull, while disclosed for power utility meter remote communication purpose, can also be used as a general communication system, wherein when telephone is intended as one of the destinations, electrically conducting communication signals can be communicated to a telephone line such as taught by Skinner, Sr.

2) In considering claim 50, Paull met all of the claimed subject matter as in claim 48, plus the consideration of claim 25 in view of Skinner, Sr.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1) Taylor, US 4,053,876

--A similar power line torroid coupler (see col. 4, lines 19-28).

2) Fernandes, US 4,904,996

--A similar power line torroid coupler (see Figs. 3c & 8).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin C. Lee whose telephone number is (703) 306-4223. The examiner can normally be reached on Mon -Fri 11:00Am-7:30Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Wu can be reached on (703) 308-6730. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-8576.

Benjamin C. Lee
Primary Examiner
Art Unit 2632

B.L.